

bed inseparable by any great distinction from, and under, sands full of the Potton-Sand fossils\*.

A discussion of the whole question and descriptions of the fossils are given in my 'Geology of the Country round Cambridge.' It may be here stated that this investigation led to proposing the following classification of the secondary strata:—

Cretaceous ...	{	Chalk. Greensand. Gault.
Psammolithic (or Siliceous)	{	Shanklin (or Lower Green) Sand. Wealden { Potton? and Wicken and Purbeck { Farringdon beds? Portland.
Pelolithic (or Felspathic) ...	{	Kimmeridge Clay. Coral Rag and Gamlingay Clay. Oxford Clay.
Oolitic .....	{	Great Oolite. Inferior Oolite. Lias. Trias.

While these divisions mark approximately the greater physical breaks and the periods when great changes were made in physical geography, it happens almost as a necessary consequence that there is a linking of the life between each of the six great groups of formations here indicated.

V.—*Remarks on Pyrula (Fulgur) carica (Lamarck) and Pyrula (Fulgur) perversa (Lamarck).* By T. GRAHAM PONTON.

ALTHOUGH fully alive to the responsibility which rests upon any one who presumes to doubt the specific value of old and well-known forms, I nevertheless venture to submit the few following remarks to the consideration of other conchologists.

Having for some time past been engaged in re-arranging the collection of shells in the museum of this city, and having paid particular attention to the species comprised in the Lamarckian genus *Pyrula*, I have reluctantly come to the conclusion, for reasons to be afterwards mentioned, that *Pyrula perversa* (La-

\* At the meeting of the Cambridge Philosophical Society, May 27, 1867, a paper was read "On the association of Potton-Sand fossils with those of the Farringdon Gravels in a phosphatic deposit at Upware on the Cam; with an account of the superposition of the beds, and the significance of the affinities of the fossils." This series I propose to name the Wicken and Herrimere group. I have already obtained 120 species, including many continental species not previously recorded in Britain.

marck) is not a distinct species from *P. carica* (Lamarck), but simply a reversed form of that shell.

The chief distinctions relied on for the discrimination of the two species, independently of the difference in the direction of the whorls, are

1. The comparatively greater breadth of the shell in *Pyrula carica*.

2. The orange-red colouring of the columella in the same species.

Now let us see how far these distinctions are worthy of reliance.

1. On measuring a number of both shells, I find that in shells of either species in which the *length* is equal, the *breadth* is also equal.

2. As to colouring: in specimens of *P. carica*, in this museum and other collections which I have examined, the colour of the columella varies from the typical deep orange, through various shades of yellow more or less intense, to, in one instance, a pure white—this individual being young, but not very small. Again, in specimens of *P. perversa*, I find that the colouring of the columella varies from the normal white to a yellow, in some instances deeper than that of many specimens of *P. carica*.

Another distinction sometimes relied on is, that the interior of the aperture in *P. carica* is merely striated, whereas in *P. perversa* it is grooved; but here, again, this appears to be an individual character, depending more on age than anything else; for the aperture of young specimens of *P. carica* is distinctly *grooved*; and the grooves in the aperture of mature individuals of *P. perversa* become in most instances almost obliterated, degenerating into mere striations.

The characters of the two species based on the form of the spire and the external coloration and sculpture of the shell are so variable that they must, I think, be regarded rather as individual than specific.

There is one obstacle, however, to the admission of the specific identity of the two forms—namely, the difference of locality, *P. carica* being usually considered to be confined to the more northern seaboard of America, and *P. perversa* to the more southern. This fact might seem to take the case out of the ordinary one of reversed shells; nevertheless a parallel case might, I think, be found in the differences caused by locality in *Purpura lapillus*, *Buccinum undatum*, &c. The fact itself, moreover, in the case under consideration requires confirmation; and it is by no means certain that *P. perversa* and *P. carica* are not both found in the West Indies. There is, indeed, in the collection

of this museum a specimen of *P. perversa* said to have been brought from South Carolina; but I should not like to lay much stress upon this, as the localities given, in collections, for foreign shells are too often, alas! not to be depended on.

I may add that my notes on these species were submitted to Dr. Eduard von Martens, of Berlin; and it is at his suggestion they are published.

In conclusion, I would suggest the following amended diagnosis of the shells in question:—

*Pyrula carica* (Lamarck).

Shell pyriform, ventricose, tumid, rather thick, more or less transversely striated; whorls *dextral*, more or less depressedly angled round the upper part, armed at the angle with large flattened spines; interior of the aperture striated or faintly grooved; columella varying in colour from deep orange to white; exterior of the shell white, variously streaked and banded with reddish brown.

*Hab.* South Carolina, West Indies?

Var. *α*. The *Pyrula perversa* of Lamarck.

The shell the same as the last; but whorls *sinistral*; aperture more or less distinctly grooved; colour of the columella varying from pure white to deep yellow.

*Hab.* West Indies, Gulf of Mexico, Florida, South Carolina?

Two other varieties might perhaps be added, namely:—

Var. *β*. Shell thin; colours pale or uniform; smooth within; *dextral*.

Var. *γ*. The shell with large spines, with a rather short but very gibbous and swollen canal.

*Hab.* Guyana. A specimen in the Museum at Berlin (Dr. von Martens).

Clifton, near Bristol, June 10, 1867.

VI.—On the Tunnelling Coleopterous Genera *Bledius*, *Heterocerus*, *Dyschirius*, and their Danish Species. By Professor J. C. SCHIÖDTE\*.

THE connexion between these three genera is not of a systematic character, for they belong to three widely different families;

\* Translated from the Danish original in 'Naturhistorisk Tidsskrift,' 3 ser. vol. iv. p. 171. Copenhagen, 1866.